

U. S. GOV'T
MASTER
SPECIFICATION
No. 163

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS
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CIRCULAR OF THE BUREAU OF STANDARDS, No. 182

[Issued July 23, 1924]

UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR
RECORD AND COPYING INK

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 163

This specification was officially promulgated by the Federal Specifications Board on June 30, 1924, for the use of the Departments and Independent Establishments of the Government in the purchase of record and copying ink.

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I. TYPE

The record and copying ink shall be of the blue-black type.

II. MATERIAL AND WORKMANSHIP

Shall be as described under General Requirements.

III. GENERAL REQUIREMENTS

The ink shall be iron gallotannate ink, not inferior in any essential to one properly prepared according to the following formula, in which all of the ingredients are of the strength and quality prescribed in the United States Pharmacopœia.

	Grams
Tannic acid.....	23. 4
Gallic acid crystals.....	7. 7
Ferrous sulphate.....	30. 0
Hydrochloric acid, dilute, U. S. P.....	25. 0
Carbolic acid (phenol).....	1. 0
Soluble blue, Schultz No. 539.....	3. 5
Water to make a volume of 1,000 cc at 20° C.	

IV. DETAIL REQUIREMENTS

Shall be as described under General Requirements.

V. METHOD OF INSPECTION AND TESTS**1. METHOD OF TAKING SAMPLES**

An original unopened bottle, bearing all of the manufacturer's marks, shall be sent to the testing laboratory when such bottle contains not less than 16 fluid ounces. When the ink is furnished in smaller bottles, enough of them to aggregate at least 16 fluid ounces shall be sent to the laboratory with all marks intact.

The 16-ounce bottle, or the combined contents of the smaller bottles, shall be allowed to stand undisturbed for 24 hours to allow any sediment to settle. Enough of the clear ink for all of the tests shall then be drawn off in a pipette. The bottle shall then be inverted slowly and the amount and character of any sediment noted.

2. TESTS

The sample shall be tested in comparison with a standard ink made according to the above formula.

Streaks shall be made by allowing measured portions, of about 0.6 cc each, of the clear ink to flow freely across a sheet of white bond paper which is pinned to a board or clamped to a pane of glass and held at an inclination of 45°. For better comparison streaks of the standard shall be made on the same sheet as those of the sample.

(a) When the streaks are dry, the sheet shall be examined on the front and the reverse sides. The streaks of the sample shall have the same general form as those of the standard. They shall be as uniform in color when viewed from the front and the back and shall show no more evidence of striking through the paper.

(b) The paper shall be cut into inch-wide strips at right angles to the streaks. Some of the strips shall be kept away from light and fumes, and others used for making the following tests, after they have been exposed to diffused daylight for one week:

After a week's exposure to diffused daylight the streaks of the sample shall be as intensely black as those of the standard.

After exposure to direct sunlight for 96 hours, or at a distance of about 10 inches from an arc or ultra-violet light for 48 hours, the streaks of the sample shall show no more evidence of fading than those of the standard.

Strips shall be soaked in water and in 50 per cent alcohol for 24 hours at room temperature. The sample shall show no greater loss of color than the standard.

NOTE.—Ethyl alcohol denatured with methanol is suitable for this purpose.

Strips shall be soaked in bleaching powder solution containing N/200 available chlorine. The effect upon the sample, in comparison with the standard, shall be noted after 15 minutes, 1 hour and 24 hours at room temperature. The sample shall show no greater loss of color than the standard.

(c) The content of metallic iron shall be determined in 10 cc of the sample by any suitable chemical procedure. The content of metallic iron shall be not less than 0.58 nor more than 0.70 g per 100 cc.

(d) Twenty-five cc each of the sample and of the standard shall be allowed to stand undisturbed in similar colorless glass vessels loosely covered with filter paper to keep out dust. After two weeks' exposure to diffused daylight and air at ordinary room temperature the sample shall be as free from mold and deposit upon its surface and upon the sides and bottom of the container as the standard.

(e) The sample shall be no more corrosive to steel pens than the standard. For each sample under test, including the standard, select two new pens from the same box. Clean the pens with alcohol and ether, dry them in an oven at 105° C., and weigh each pair together to the nearest mg. Immerse each pair of pens in 25 cc of the ink contained in a small beaker or flask. After 48 hours remove the pens, wash and scrub them with water and a cloth to cleanse them thoroughly, rinse them with alcohol, dry them in an oven, and weigh. If the pens in the sample lose more weight than those in the standard, two more tests shall be made. If the loss in one of these tests is greater than the loss in the standard ink, the sample shall be rejected

VI. PACKING AND MARKING

No requirements specified.

VII. ADDITIONAL INFORMATION

The ink is suitable for writing permanent records. It is not recommended for more than one press copy, nor for use in fountain pens, nor for other ordinary purposes.

VIII. GENERAL SPECIFICATIONS

No requirements specified.

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